



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,541	04/06/2005	Brian Klotz	P25,134-A USA	4782

29880 7590 04/21/2010
FOX ROTHSCHILD LLP
PRINCETON PIKE CORPORATE CENTER
997 LENOX DRIVE
BLDG. #3
LAWRENCEVILLE, NJ 08648

EXAMINER

EMPIE, NATHAN H

ART UNIT	PAPER NUMBER
----------	--------------

1712

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

04/21/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocket@foxrothschild.com

Office Action Summary	Application No. 10/530,541	Applicant(s) KLOTZ ET AL.	
	Examiner NATHAN H. EMPIE	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner acknowledges receipt of 12/8/09 amendment to the specification and claims which were entered into the file. Claims 1-20 are currently pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Independent claims 1, 7, 12, 13, 17, and 19 were amended to add the limitation defining the pH range of the coating composition as a "pH of about 11 to about 14"; however, the applicant's originally filed disclosure only recites pH ranges of "about 10 to about 14" and "about 11.5 to about 12.5" (see, for example, pg 15 last full paragraph, and pg 22 last full paragraph), so it does not adequately support the currently claimed pH range of about 11 to about 14. The other dependent claims do not cure the defects of the claims from which they depend.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 1792

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 4-12, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mosser (US patent 4,537,632; hereafter '632) in view of Hornberger et al, US Patent 4,917,960; hereafter '960).

3. Claims 1, 4, 5, 12: '632 teaches a coating process and metallic surface comprising: (A) applying to a metallic or ceramic surface a coating composition which does not contain chromium (see, for example, wherein the binder species is taught as alkali metal silicates, col 10 lines 4 - 8); which is capable of forming on the surface a corrosion resistant coating (see, for example, abstract).

4. Which consists essentially of a sodium silicate and an aqueous liquid phase having dispersed therein solid aluminum particles to form on the surface a wet coating (see, for example, abstract, further wherein the binder species is taught as a sodium silicate (col 10 lines 4 - 8), and the coating is taught to be applied via a wet coating method such as spin or dip coating (col 9 lines 23 - 26)),

5. and drying said wet coating under conditions which form a solid coating which is not electrically conductive and thereafter treating said non-conductive coating under conditions which convert said non-conductive coating to an electrically conductive, corrosion-resistant coating (see, for examiner burnishing step conducted to make the coating electrically conductive following drying step, col 14 lines 26 - 33).

6. The focus of '632 is that improved corrosion and erosion resistance results from binder coating systems with additions of aluminum particles (see, for example, abstract). In addition to teaching sodium silicate based binders, '632 has primarily

Art Unit: 1792

focused on acidic chromate / phosphate based binder systems, including providing most of the prepared examples with such chromate / phosphate based binder systems (See, for example, abstract, examples 1-8). '632 has taught that "the pH of the aqueous binder used herein is preferably, but not necessarily, in the range of about 0 to about 3.0"; but does not explicitly teach that coating composition has a pH of 11 to about 14. '960 teaches a method of applying a coating comprising sodium silicate and aluminum particles (see, for example, column 9 lines 26-28 and column 10 lines 42-45). '960 further teaches that it is well known in the art that chromate / phosphate based binder systems generally have low pH such as in the range of 0 to 4 (See, for example, col 10 lines 5 - 17). '960 further teaches that is well known in the art that silicate binders are generally basic in pH, in the pH range of 8-13 (see, for example, col 10 lines 58 - 60). As the chromate / phosphate binder system is predominately discussed and examined in the '632 reference, the examiner asserts that the taught range of about 0 to about 3 within the '632 reference was meant to describe those acidic phosphate / chromate binder systems, in agreement with the knowledge of one of ordinary skill in the art. As in agreement with the knowledge of one of ordinary skill in the art, the examiner asserts that alkaline metal silicates are generally basic in nature. The examiner asserts that as both '632 and '960 have taught methods of forming coatings comprising alkaline metal silicate binders and aluminum particles it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a pH range of 8-13 in conjunction with the silicate binder system, as such a pH range is well know and predictable for such systems, and would achieve the predictable result of forming

Art Unit: 1792

coatings comprising alkaline metal silicate binders and aluminum particles. Although a pH range of 8-13 is not explicitly 11 to about 14, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a pH within the claimed range since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

7. Claim 2: '632 further teaches the surface is metallic (see, for example, col 12 lines 13-15).

8. Claim 6: '632 further teaches the coating composition is particularly intended for coating turbine engine components.

9. Claim 7: The process of '632 in view of '960 which renders obvious claims 1-2, and 4-6 results in a metallic or ceramic surface coated with an electrically conductive, aluminum powder containing silicate coating which does not contain chromium.

10. Claim 8: '632 in view of '960 teach the surface of article of claim 7 (described above) wherein '632 further teaches coating thicknesses on the order of less than 3 mils and less than 1 mil (see, for example, col 8 lines 63 - 66). Wherein 3 mils and 1 mil fall within the claimed 0.8 to 3.5 mil range. The presently claimed properties are believed to be an inherent feature of the embodiments disclosed by '632 as the coating composition and thicknesses as well as the coating processes are substantially identical to the claimed article and process. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or

Art Unit: 1792

substantially identical processes, a prima facie case of anticipation has been established, *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

11. Claims 9-11, as discussed in claim 8 above, '632 in view of '960 does not teach the specific tests and results claimed; however, the presently claimed properties are believed to be an inherent feature of the embodiments disclosed by '632 in view of '960 as the coating composition /article and thicknesses as well as the coating processes are substantially identical to the claimed article and process. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of anticipation has been established, *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

12. Claim 19: '632 in view of '960 teaches the method of claim 1 and 12 (described above), and '632 further teaches that on the coatings of the invention, as any stage prior to and after rendering the coating sacrificial, there may be applied on or more layers of a coating of the invention (see, for example, col 11 lines 26 - 29); effectively teaching the claimed process of forming a multi-ply coating.

13. Claim 20: '632 further teaches wherein the surface is steel (see, for example, col 14, lines 26 - 30, wherein steel parts are taught to receive the corrosion resistant coatings).

14. Claims 1-2, 4, 7-12, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over '960.

15. Regarding claim 1, '960 et al teaches a coating process comprising applying to a surface a coating composition (coating of aluminum plates with binders, Column 9 lines 26-28) consisting essentially of an alkali metal silicate and an aqueous liquid phase (water-soluble alkali metal silicates as binders in organic liquid, Column 10 lines 42-45) having dispersed therein solid aluminum particles (aluminum powders, Column 9 lines 26-28) to form on the surface a wet coating (dipping or spraying aqueous coating, Column 11 lines 41-45). '960 et al teaches the presently claimed conditions of (ii): drying the coating under conditions which form a solid coating which is not electrically conductive (air dried coating, Column 11 lines 55-61) and thereafter treating said non-conductive coating under conditions which convert said non-conductive coating to an electrically conductive, corrosion-resistant coating (electrically and thermally conductivity by curing treatment, Column 9 lines 55-65). The corrosion-resistance would be an inherent characteristic due to the use of the substantially same coating composition comprising sodium silicate and aluminum powder.

16. '960 further teaches that the silicate binders are in the pH range of 8-13 (see, for example, col 10 lines 58 – 60). Although a pH range of 8-13 is not explicitly 11 to about 14, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a pH within the claimed range since in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

Art Unit: 1792

17. Regarding claims 2 and 4, the coating process of '960 et al is applied to metallic and ceramic surfaces (column 4 lines 11-13) under the conditions of (ii), as described for claim 1.

18. Regarding claim 7, the process of '960 et al, which anticipates present claims 1-2 and 4-5, results in a metallic or ceramic surface coated with an electrically conductive, aluminum-containing silicate coating.

19. Regarding claim 8, '960 et al teaches a coating thickness of about 0.001 inches to about 0.100 inches (Column 12 lines 12-15, the thickness range being equivalent to about 0.025 mils to about 2.5 mils, falling within and essentially overlapping the presently claimed 0.8-3.5 mils). '960 et al does not disclose testing the corrosion-resistant properties as in present claim 8. The presently-claimed properties are believed to be an inherent feature of the embodiments disclosed by '960 as the coating compositions and thicknesses are similar as well as the coating processes (present specification coating process on Page 20 compared with that of '960 at Column 13 lines 18-22 wherein similar drying and curing conditions are used).

20. Regarding claims 9-11, as discussed for the corrosion-resistant properties of claim 8 above, '960 et al does not discuss the heat resistance, flexibility, or hydraulic-oil resistance of the coated surface, however the presently claimed properties are also believed to be inherent to the disclosed embodiments as they are a result of the metal silicate and aluminum active ingredients subjected to the coating process all of which are common to '960 et al.

Art Unit: 1792

21. Regarding claim 12, '960 et al discloses a process for converting a solid silicate coating which contains aluminum particles (alkali metal silicate binders, column 10 lines 42-45, with aluminum powders, column 9 lines 26-28), which is adhered to a surface (air-dried coating of column 11 lines 55-56), and which is not electrically conductive to a conductive coating by subjecting the non-conductive coating to conditions which effect expansion of the aluminum particles to place them into intimate contact with one another to the extent that the coating is rendered electrically conductive (thermal treatment to fuse said aluminum particles and create an electrically conductive coating, column 9 lines 60-65).

22. Regarding claim 19, the process of '960 et al described above in regards to present claim 1 also is used to form a multi-ply coating (see column 11 lines 55-61) by first applying a layer of the wet coating followed by air-drying (to form first dried coating of column 11 lines 57-58). The coating application is repeated and thus the composition is applied to the surface of the air-dried coating to form thereon an overlying layer of wet coating. The wet coating is dried under conditions which form a solid multi-ply coating which is not electrically conductive (final drying step in line 59). The multi-ply coating thus formed undergoes conversion to an electrically conductive corrosion-resistant coating during the final curing in the embodiment disclosed in column 9 lines 56-65).

23. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over '632 in view of '960 as applied to claim 2 above, and further in view of Mosser et al (US patent 5,478,413; hereafter '413).

24. Claim 3: '632 in view of '960 teaches the method of claim 2 wherein the non-conductive coating is rendered conductive via a burnishing process (described in rejection above). '632 in view of '960 does not explicitly teach wherein the non-conductive coating is rendered conductive by setting the drying conditions at levels sufficient to perform such a conversion. '413 is a method of forming a corrosion-resistant coating comprising aluminum powder and a binder (see, for example, abstract). '413 further explicitly references the '632 patent as an appropriate teaching to the aluminum powder (see, for example, col 5 lines 38 – 42). '413 further teaches converting its deposited coating to an electrically conductive coating via a burnishing process like that of '632, or additionally teaches that it is well known in the art that such a conversion process can predictably be performed by solely a thermal process of heating (see, for example, col 6 lines 34 - 55). As both '632 in view of '960 and '413 teach methods for converting non-conductive aluminum powder based corrosion resistant coatings into electrically conductive coatings, it would have been obvious to one of ordinary skill in the art at the time of invention to have substituted the burnishing process for a thermal heating process to achieve the predictable result of forming the electrically conductive corrosion resistant coating.

25. Claims 13 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over '632 in view of '960 and Wang et al (US patent 5,998,525; hereafter '525).

26. Claim 13: '632 teaches a coating composition which does not contain chromium, which is effective in forming on a metallic or ceramic surface a corrosion-resistant coating, and which consists essentially of (a) a sodium silicate, (b) an aqueous liquid phase having dispersed therein solid aluminum particles (see, for example, abstract, further wherein the binder species is taught as a silicate (col 10 lines 4 - 8), and the coating is taught to be applied via a wet coating method such as spin or dip coating (col 9 lines 23 – 26)),

27. The focus of '632 is that improved corrosion and erosion resistance results from binder coating systems with additions of aluminum particles (see, for example, abstract). In addition to teaching sodium silicate based binders, '632 has primarily focused on acidic chromate / phosphate based binder systems, including providing most of the prepared examples with such chromate / phosphate based binder systems (See, for example, abstract, examples 1-8). '632 has taught that "the pH of the aqueous binder used herein is preferably, but not necessarily, in the range of about 0 to about 3.0"; but does not explicitly teach that coating composition has a pH of 11 to about 14. '960 teaches a method of applying a coating comprising sodium silicate and aluminum particles (see, for example, column 9 lines 26-28 and column 10 lines 42-45). '960 further teaches that it is well known in the art that chromate / phosphate based binder systems generally have low pH such as in the range of 0 to 4 (See, for example, col 10 lines 5 - 17). '960 further teaches that is well known in the art that silicate binders are

Art Unit: 1792

generally basic in pH, in the pH range of 8-13 (see, for example, col 10 lines 58 – 60).

As the chromate / phosphate binder system is predominately discussed and examined in the '632 reference, the examiner asserts that the taught range of about 0 to about 3 within the '632 reference was meant to describe those acidic phosphate / chromate binder systems, in agreement with the knowledge of one of ordinary skill in the art. As in agreement with the knowledge of one of ordinary skill in the art, the examiner asserts that alkaline metal silicates are generally basic in nature. The examiner asserts that as both '632 and '960 have taught methods of forming coatings comprising alkaline metal silicate binders and aluminum particles it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a pH range of 8-13 in conjunction with the silicate binder system, as such a pH range is well know and predictable for such systems, and would achieve the predictable result of forming coatings comprising alkaline metal silicate binders and aluminum particles. Although a pH range of 8-13 is not explicitly 11 to about 14, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a pH within the claimed range since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

28. '632 further teaches that a variety of additives can be included to aid in the rheology and coating behavior of the coating (see, for example, col 10 lines 52 – 36). But '632 in view of '960 does not explicitly teach an organic solvent which is partially miscible or immiscible in water. '525 teaches a method of forming a coating

Art Unit: 1792

composition which requires a variety of barrier properties, and comprises a dispersion of particulate powders / pigments, and a silicate binder system (see, for example, abstract and col 3 line 5 - col 4 line 5). '525 further teaches that coalescing agents such as propylene glycol butyl ether organic solvent are well known in the coating art to be added to such coating compositions, as they are well known to improve the uniform dispersion or the pigments in the coating composition (see, for example, col 5 lines 25 – 35). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated the partially miscible organic solvent, propylene glycol butyl ether as taught by '525 as one of the dispersion aiding additives taught in the composition of '632 in view of '960, as '525 has explicitly taught that such an organic solvent is well known in the coating art to predictably improve dispersion uniformity.

29. Claims 14-16: '525 has taught propylene glycol butyl ether as the organic solvent which meets the requires chemical properties claimed in claims 14-16.

30. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over '632 in view of '960 and Hayashi et al (US patent 4,219,358; hereafter '358).

31. Claim 17: '632 teaches an aqueous coating composition which does not contain chromium, and which is effective in forming a corrosion-resistant coating on a metallic or ceramic surface and which consists essentially aluminum particles dispersed in the composition and a mixture of alkali silicates (see, for example, abstract, further wherein the binder species is taught as alkali silicates (col 10 lines 4 - 8), and the coating is

Art Unit: 1792

taught to be applied via a wet coating method such as spin or dip coating (col 9 lines 23 – 26)).

32. The focus of '632 is that improved corrosion and erosion resistance results from binder coating systems with additions of aluminum particles (see, for example, abstract). In addition to teaching sodium silicate based binders, '632 has primarily focused on acidic chromate / phosphate based binder systems, including providing most of the prepared examples with such chromate / phosphate based binder systems (See, for example, abstract, examples 1-8). '632 has taught that "the pH of the aqueous binder used herein is preferably, but not necessarily, in the range of about 0 to about 3.0"; but does not explicitly teach that coating composition has a pH of 11 to about 14. '960 teaches a method of applying a coating comprising sodium silicate and aluminum particles (see, for example, column 9 lines 26-28 and column 10 lines 42-45). '960 further teaches that it is well known in the art that chromate / phosphate based binder systems generally have low pH such as in the range of 0 to 4 (See, for example, col 10 lines 5 - 17). '960 further teaches that is well known in the art that silicate binders are generally basic in pH, in the pH range of 8-13 (see, for example, col 10 lines 58 – 60). As the chromate / phosphate binder system is predominately discussed and examined in the '632 reference, the examiner asserts that the taught range of about 0 to about 3 within the '632 reference was meant to describe those acidic phosphate / chromate binder systems, in agreement with the knowledge of one of ordinary skill in the art. As in agreement with the knowledge of one of ordinary skill in the art, the examiner asserts that alkaline metal silicates are generally basic in nature. The examiner asserts that as

Art Unit: 1792

both '632 and '960 have taught methods of forming coatings comprising alkaline metal silicate binders and aluminum particles it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a pH range of 8-13 in conjunction with the silicate binder system, as such a pH range is well know and predictable for such systems, and would achieve the predictable result of forming coatings comprising alkaline metal silicate binders and aluminum particles. Although a pH range of 8-13 is not explicitly 11 to about 14, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a pH within the claimed range since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

33. '632 has broadly taught wherein the non-aluminum powder components are up to about 35% and preferable up to 25% of the total volume based on the total aluminum content (see, for example, col 7 lines 1 - 5). '632 has further provided a series of examples at a variety of binder to aluminum powder compositions (See, for example, col 12 line 28 - col 15 line 45). But '632 in view of '960 has not explicitly taught in one embodiment wherein there exists a mixture of sodium silicate and lithium silicate and the total silicate content of the composition is about 2.5 wt% to about 30wt% and the weight ratio of sodium silicate to lithium silicate being about 0.25 to 1 to about 4 to 1. '358 teaches a coating composition to serve as a non-chromium containing corrosion resistant coating comprising a fine metal powder and a mixed silicate binder system (see, for example, abstract, col 3 line 59 - col 4 line 5, and col 10 line 4 - 14). '358

Art Unit: 1792

teaches that it is well known in the art to mix two or more silicate systems (such as sodium and lithium silicates) to yield a predictable binder for such a corrosion resistant coating composition (see, for example, col 3 line 59 - col 4 line 5, and col 10 line 4 - 14). '358 further teaches that the weight ratio of alkali metal silicate to metal powder is on the order of 1:12 to 1:18 (about 5.5 to 8.3 wt%) (see, for example, col 4 lines 1 - 5); and has further provided a working example, wherein a sodium and lithium silicate binder system is used and wherein the weight ratio of sodium silicate to lithium silicate is about 1.09 to 1 (see, for example, col 10 lines 4 - 15). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated the sodium silicate / lithium silicate mixed binder system taught by '358 into the method of '632 in view of '960 since '632 has taught that alkali silicate systems as binders for metal powder containing corrosion resistant coatings, but was silent as to working examples, and '358 has taught such working examples which perform predictably as binders for metal powder containing corrosion resistant coatings. When a primary reference is silent as to a certain detail, one of ordinary skill would be motivated to consult a secondary reference which satisfies the deficiencies of the primary reference. Although neither reference explicitly teaches the total silicate composition being about 2.5 wt % to 30wt%, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated such a claimed range since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

34. Claim 18: '632 in view of '960 and '358 teach the method of claim 17 (described above) wherein '632 has broadly taught wherein the non-aluminum powder components are up to about 35% and preferable up to 25% of the total volume based on the total aluminum content (see, for example, col 7 lines 1 – 5). And '358 has taught that the weight ratio of alkali metal silicate to metal powder is on the order of 1:12 to 1:18 (about 5.5 to 8.3 wt%) (see, for example, col 4 lines 1 – 5). Although none of the references explicitly teaches the total silicate composition being about 7 wt % to about 13 wt%, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated such a claimed range since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

35. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over '960 as applied to claims 1-2 above and further in view of Baldi (US Patent 4,975,421; hereafter '421).

36. As discussed in the rejections of claims 1 and 2 above, '960 et al teaches the invention substantially as claimed but fails to teach applying the coating to a metallic surface of a part of a turbine engine. '421 teaches protecting metal surfaces of jet engine compressor blades by applying top coatings containing powdered aluminum (Column 2 lines 1-8) to provide corrosion resistance (Column 2 line 33). It would have been obvious to those of ordinary skill in the art at the time of the invention that the engine part of '421 could be coated with the coating of '960 et al. One would have

Art Unit: 1792

been motivated to combine the teachings of the references and arrive at the present invention in order to provide the jet engine surfaces of '421, which are subjected to high thermal stresses, with the electrically and thermally conductive coatings of '960.

37. Claims 3 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over '960, as applied to claims 1-2 above, and further in view of Baer (US Patent 3,998,779; hereafter '779) and as evidenced by the accompanying Data Sheet.

38. Regarding claim 3, '960 et al teaches the process substantially as claimed (see rejection of claim 1 above) but fails to teach drying of the wet coating under conditions which directly convert said coating to an electrically conductive, corrosion-resistant, solid coating. '779 teaches that coatings containing aluminum alloy particles in non-metallic adhesive material such as alkali metal silicates (Column 3 lines 8-12 and lines 40-44) can be rendered electrically conductive according to the amount of powdered alloy material dispersed therein (Column 5, lines 7-10). Thus the drying of the wet coating (curing at 300°F for a half an hour, Column 7 lines 10-14) renders a solid, electrically conductive, corrosion-resistant coating. It would have been obvious to those of ordinary skill in that art at the time of the invention that the coating composition and process described by '779 could be combined with the process taught by '960 et al by adjusting the total aluminum powder content in order to provide a direct method of rendering the coating electrically conductive. One would have been motivated to combine the teachings of these references and arrive at the present invention in order

Art Unit: 1792

to eliminate the additional step and associated costs of the higher temperature curing step taught by '960 et al.

39. Regarding claim 13, as discussed above (refer to coating composition in rejection of claim 1), '960 et al teaches the coating composition substantially as claimed but fails to teach the use of an additive which is effective in improving the corrosion-resistance of the coating. However, '960 et al discloses an embodiment wherein the epoxy resins (Column 5 lines 50-55) as fugitive material remain in the coating composition, said resins forming pores in the coating upon removal (Column 4 lines 14-21). '779 teaches that epoxy resin additives provide resistance to corrosion (Column 3 line 65 - Column 4 line 1) and other outstanding properties such as flexibility (Column 4 lines 7-11). These epoxy resins must be dissolved in solvents, for example the organic solvent diisobutyl ketone (Column 6 lines 29-35). This solvent has very limited miscibility in water (0.05 m/m, see attached Data Sheet). It would have been obvious to those of ordinary skill in the art at the time of the invention that the resin/organic solution of '779 could be used as the epoxy resin material used by '960 et al and that these additives would provide improved characteristics to the coating prior to removal. One would have been motivated to combine the teachings of these references and arrive at the present invention in order to provide the improved coating properties taught by '779.

40. Regarding claims 14-16, a miscibility of about 1ml in 100ml in water at 20°C is considered immiscible since miscible substances mix in all proportions (i.e. roughly 100ml per 100ml). The organic solvent used by '779, diisobutyl ketone has miscibility in

Art Unit: 1792

water at 20°C, reported in weight percent, of 0.05 % m/m. This translates to roughly 0.06 ml per 100ml of water, which, in terms of miscibility, is about 1ml.

41. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over '960 in view of '779, as applied to claims 3 and 13-16 above, and further in view of Stich et al (US Patent 3,180,746; hereafter '746).

42. As discussed above in the rejection of claims 3 and 13-16, '960 in view of '779 teaches the coating composition substantially as claimed. '779 further teaches a total silicate content of 7.3 wt % (Column 7 lines 1-7), as in present claims 17 and 18. The combined references fail to teach using a mixture of sodium silicate and lithium silicate, the weight ratio of sodium silicate to lithium silicate being about 0.25 to 1 to about 4 to 1. '746 teaches protective coatings comprising aqueous mixtures of sodium silicates and lithium silicates with weight ratios of lithium to sodium in the range of 0.75 to 1.00 (Column 1 lines 10-25), which corresponds to a range of sodium silicate to lithium silicate ratios of from 1:1 to 1.333:1, as in present claim 17. Thus, '746 teaches this ratio to be a result effective variable in providing the protective properties of the coatings, such as the adhesive and cementing properties (Column 1 lines 65-68). It would have been obvious to those of ordinary skill in the art at the time of the invention that the silicates of '746 could be used as the silicates in the coatings of '960. One would have been motivated to combine these teachings and arrive at the present invention in order to provide the coatings with adhesive properties as taught by '746.

Response to Arguments

43. Applicant's arguments filed 12/8/09 that the string of '632 rejections do not teach the newly added limitations are unconvincing in view of newly-incorporated '960 reference, as discussed above.

44. Applicant's remaining arguments filed 12/8/09 have been fully considered but they are not persuasive.

With regard to the art rejections made in the '960 string, the examiner disagrees with applicant's assertion that "a coating which is porous whether it be in the form of isolated voids or 'closed porosity' or not 'through porosity', is a coating which is not corrosion-resistant." (pg 10 or 12/8/09 remarks). The examiner asserts that the arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). '960 has explicitly taught that "there are applications where isolated voids are preferred and in which it not desirable that the porosity be interconnecting porosity" (see, for example, col 8 lines 54 - 56). In such closed porosity situations as taught by '960, the examiner asserts that such a closed porous coating would not permit the passage of moisture and other materials capable of corroding the substrate (as there would not exist an interconnected void pathway for the moisture to reach the substrate surface), effectively resulting in a corrosion resistant coating. The coating composition of the prior art is substantially identical in composition (chromium free, pH range, sodium silicate, aqueous liquid phase with dispersed aluminum particles) and produced by a substantially identical process (as described in rejections above) so the examiner maintains that the coating

Art Unit: 1792

would inherently possess the same corrosion resistant properties. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of obviousness has been established, *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

“When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not” *In re Spada*, 15 USPQ2d 1655 1658 (Fed Cir. 1990). Further, since the addition of the pore forming material would not alter the basic and novel corrosion resistant properties of the coating, it would additionally meet the consisting essentially of language in the claims.

45. The argument toward the porous coating of '960 are reiterated repeatedly in applicant's arguments directed to claims 3, 6, and 13-18 (pgs 11 – 15 of remarks on 5/3/09 which the applicant has chosen to re-invoke on pg 11 of 12/8/09 remarks). The examiner asserts that this issue is addressed in the preceding paragraph, wherein the teaching of the primary reference has taught this alleged deficiency. As no further arguments directed against the secondary references or their combinations were raised these claims remain rejected.

46. The applicant's remaining argument (pg 13 – 14 of remarks 5/3/09) against the examiner's rejection of claim 3 over the combination of '960 and '779 and as evidenced by a data sheet, wherein the applicant has asserted that '779 has only taught adding another electrically conductive material is unconvincing. The examiner asserts that the teaching in '779 toward including a further electrically conductive species is one of a few

Art Unit: 1792

methods / examples that '779 has taught. The examiner asserts that disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). The examiner further sites the explicit teaching in '779 to support the above rejection: "The coating material may be intrinsically conductive according to the amount of powdered alloy material dispersed therein" (col 5 lines 7 – 10). Further the section the applicant has cited (col 5 lines 10 – 27 of '779) does not exclude or discredit adding more of the same electrically conductive material. Further, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "changing the temperature of the curing conditions to a higher temperature") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

47. As to the dependent claims, they remain rejected as no separate arguments are provided.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **NATHAN H. EMPIE** whose telephone number is **(571)270-1886**. The examiner can normally be reached on **M-F, 7:00- 4:30 EST**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Michael Cleveland** can be reached on **(571) 272-1418**. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Art Unit: 1792

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. H. E./

Examiner, Art Unit 1792

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1792